

IN THE SPECIFICATION:

Amend numbered paragraphs 35, 36, and 82-93 to read as follows:

35. Fig. 6 illustrates a cross sectional view of a single liquid crystal-filled Fabry-Perot etalon according to the third embodiment of the present invention, with an enhanced gap width implemented via a hybrid air plus LC gap.

a1

36. Fig. 7 illustrates a cross sectional view of a single liquid crystal-filled Fabry-Perot etalon according to the third embodiment of the present invention, with an enhanced gap width implemented via a hybrid glass plus LC gap.

82. Referring to **Fig. 7**, a cross sectional view of a single liquid crystal-filled Fabry-Perot etalon according to the third embodiment of the present invention is illustrated, with an enhanced gap width implemented via a hybrid gap of glass and liquid crystal. A first etalon substrate **702** and a second etalon substrate **704** are spaced apart from one another. The etalon substrates **702**, **704** are preferably formed of fused silica. Low phase shift dielectric reflector layers **710**, **708** are coated onto each of respective opposed faces of the etalon substrates **702**, **704**.

a2

83. A spacer plate **718** is disposed between the first and second

etalon substrates **702, 704**. Precision-dimensioned spacer beads **722, 724** define the spacing between the first etalon substrate **702** and the spacer plate **718**. The spacer plate **718** is preferably formed of fused silica, as are the spacer beads **722, 724**.

84. A first transparent conductor layer **706** is also coated onto the first substrate **702**, and a second transparent conductor layer **712** is coated onto the face of the spacer plate **718** facing the first substrate **702**. The transparent conductor layers **706, 712** are preferably formed of Indium Tin Oxide (ITO). A preferred proportion of components in the ITO is 4% Tin to 96% Indium Oxide.

O2 cont'd.

85. The top coating layers on the first etalon substrate **702**, and on the spacer plate **718** are liquid crystal alignment layers **714, 716**. The alignment layers **714, 716** are formed of polyimide (preferably SE7492 polyimide). After coating, the polyimide alignment layers **714, 716** are each buffed to provide alignment functionality. A liquid crystal material **730** is filled in between the first etalon substrate **702** and the spacer plate **718**. E-44 liquid crystal is preferred.

86. In the implementation illustrated by Fig. 7, the overall gap between the etalon substrate glass plates **702, 704** is augmented

by inclusion of the high precision spacer plate **718**. This gap augmentation permits higher spectral resolution measurements than is possible in a cell limited in gap width by the practical limit of liquid crystal (LC) thickness. Without the gap augmentation innovation, the largest gap thickness is approximately 100 microns. When this feature of the present invention is utilized it has been possible to manufacture gaps as large as 10 mm. Furthermore, larger gaps are possible. Fig. 6 illustrates an innovative aspect of the present invention wherein a precision glass spacer plate **718** is laminated to one of the etalon substrates **704**, preferably using Norland NOA-68 UV adhesive. The reflector **708** coating remains beneath that lamination. The side of the spacer plate facing the LC includes the Indium Tin Oxide (ITO) layer **712** followed by a polyamide layer **716**.

87. Referring to **Fig. 6**, a cross sectional view of a single liquid crystal-filled Fabry-Perot etalon according to the third embodiment of the present invention is illustrated, with an enhanced gap width implemented via a hybrid gap of air and liquid crystal. A first etalon substrate **602** and a second etalon substrate **604** are spaced apart from one another. The etalon substrates **602, 604** are preferably formed of fused silica. Low phase shift dielectric reflector layers **610, 608** are coated onto

each of respective opposed faces of the etalon substrates **602**, **604**.

88. A spacer plate **618** is disposed between the first and second etalon substrates **602**, **604**. Precision-dimensioned spacer beads **622**, **624** define the spacing between the first etalon substrate **602** and the spacer plate **618**. The spacer plate **618** is preferably formed of fused silica, as are the spacer beads **622**, **624**.

a2 cont'd

89. Precision spacer posts **642**, **644** define spacing dimension between the first and second etalon substrates **602**, **604**. The spacer posts **642**, **644** are preferably formed of fused silica, are matched to 1/4 wavelength in height, and are flat to 1/10 wavelength. The spacer plate **618** is notched to provide clearance for the spacer posts **642**, **644**.

90. A first transparent conductor layer **606** is also coated onto the first substrate **602**, and a second transparent conductor layer **612** is coated onto the face of the spacer plate **618** facing the first substrate **602**. The transparent conductor layers **606**, **612** are preferably formed of Indium Tin Oxide (ITO). A preferred proportion of components in the ITO is 4% Tin to 96% Indium Oxide.

91. The top coating layers on the first etalon substrate **602**,

and on the spacer plate **618** are liquid crystal alignment layers **614, 616**. The alignment layers **614, 616** are formed of polyimide (preferably SE7492 polyimide). After coating, the polyimide alignment layers **614, 616** are each buffed to provide alignment functionality.

92. A liquid crystal material **630** is filled in between the first etalon substrate **602** and the spacer plate **618**. E-44 liquid crystal is preferred. Thus, the LC cell is bounded by a notched (to accommodate the spacer posts) spacer plate and by one substrate. The spacer-plate and substrate on the other side of the LC are preferably held in place as a cell by epoxy.

a7 cont'd.

93. In the implementation illustrated by Fig. 6, a method providing particularly large gaps is illustrated. According to this implementation, precision spacer posts separate the substrates. Rather than laminating the spacer plate to one of the etalon substrates, a large air gap **G** is formed.